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Getting Educators Involved in Real Research – the NITARP model in 30 years

The next 30 years of NASA Astrophysics must include a strong educational component. We need scientifically literate taxpayers. Few schools would hire a football coach who had never played the game, and yet, very few high school science teachers have ever done real, authentic science. This concern is reflected in the developing Next Generation Science Standards (NGSS), which emphasize cross-cutting themes linking different areas of science, and are focused on teaching the process of science, as much as the content. High quality professional development has been repeatedly identified as a key component in supporting teachers in their work to educate our students.

NITARP, the NASA/IPAC Teacher Archive Research Program, has been involving teachers in authentic research using NASA data since 2005. We partner small groups of educators with a research astronomer for a year-long original research project. For the class of 2013, we had 5-times oversubscription in teacher applications. There is clearly a need. And we meet that need; our teachers have told us, “I’ve been involved in many different professional development opportunities, and this is by far the best one I’ve ever done.” Our model works.

In the next 30 years, we would like to see our model expanded well beyond the currently-supported level of about 4 teams per year. We have more interest from scientists to mentor teams than we can currently support, as well as more interest from teachers than we can currently support.

Since we only have a year with these teachers in which we must accomplish a great deal, we currently accept the teachers who already have some baseline knowledge of astronomy and the use of real data in the classroom, but have not yet done research. We aim to establish training infrastructure to prepare teachers for a NITARP experience by teaching them the necessary astronomy, and how to use real data in the classroom.

We aim to foster a community of alumni educators who have gone through the program, with funding opportunities to attend conferences to present research, and a peer-reviewed journal dedicated to student research. In this way we can ensure that there is ongoing professional development support for our alumni throughout their careers.

NITARP offers an exceptional opportunity to engage more teachers in NASA’s work, by giving teachers access to their own observing time on Astrophysics missions. A precedent was established with the Spitzer Teacher Research Program, the precursor to NITARP. Between 2005-2009, over 30 teachers and their students received Director’s Discretionary Time on Spitzer to make their own observations. Starting in 2010, the program incorporated archival data and was renamed NITARP. All of the NITARP research projects use data housed at IPAC, ranging from Spitzer to Planck, Herschel, 2MASS, Kepler, and GALEX. Future missions can easily incorporate NITARP into their EPO program, to fulfill NASA’s stated EPO goals of strengthening NASA and the nation’s future workforce, attracting and retaining students in STEM disciplines, and engaging Americans in NASA’s mission.